

## MEMORANDUM

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<b>To:</b>	Caroline Kwan and Nica Klaber U.S. Environmental Protection Agency – Region 2	<b>Date:</b>	March 7, 2013
<b>From:</b>	Amy Corp, Anchor QEA, LLC	<b>Project:</b>	130782-01.01
<b>Cc:</b>	Jim Quadrini and Tom Schadt, Anchor QEA, LLC		
<b>Re:</b>	FSAP Addendum No. 5 – Supplemental Surface Sediment Collection		

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This addendum to the *Field Sampling and Analysis Plan* (FSAP; Anchor QEA 2011a), which was approved by the U.S. Environmental Protection Agency (USEPA) on October 28, 2011, presents an addition to Section 7.0 – Surface Sediment Sampling and describes the procedures that will be followed to perform a supplemental surface sediment collection event to evaluate the potential effects of Hurricane Sandy in October 2012 on the composition of surface sediments in Newtown Creek.

### NEED FOR SUPPLEMENTAL SURFACE SEDIMENT COLLECTION

Two analytical surface sediment collection events were conducted prior to Hurricane Sandy during the spring (133 locations) and summer of 2012 (34 locations; a subset of the 133 locations sampled in spring 2012). These results are summarized in the *Phase 1 Remedial Investigation Field Program Data Summary Report – Submittal No. 1* (Anchor QEA 2013) and the forthcoming submittal No. 2. Although the preliminary bathymetric survey analyses indicate limited changes in bed elevations, additional confirmatory surface sediment samples are recommended as an additional line of evidence to further assess the potential effects of storm Sandy on the physical composition of surface sediments in the Study Area. The purpose of the supplemental surface sediment collection is to confirm whether the physical properties of sediments along the length of the Study Area are significantly different from sediment properties measured during either the spring or summer 2012 sampling events at the same locations.

Surface sediment locations were determined based on the results of a preliminary differential bathymetry analysis conducted by comparing the 2011 single-beam bathymetry with the 2012 multi-beam/single-beam bathymetry, as described in FSAP Addendum No. 4

(Anchor QEA 2012a). The results of these comparisons show that the vast majority of the creek bottom did not experience a measurable change in sediment elevation; areas identified as experiencing measurable change were principally situated along the channel margins (see Figure 1). This differential bathymetry analysis is preliminary in that further efforts to understand the uncertainty in the bathymetry comparisons and to determine what changes in elevation between the fall 2011 and December 2012 surveys should be considered real (i.e., outside of the range of uncertainty for the comparisons) are ongoing. The final results of the differential bathymetry analysis, including the uncertainty analysis indicated above, will be provided in the *Phase 1 Remedial Investigation Report*.

The additional sample locations (shown in Figure 2) will include 5 locations in potential net loss areas, 10 locations in potential net gain areas, and 15 sample locations selected in no measurable change areas. These locations provide adequate spatial coverage and confirm areas with no elevation change have not experienced a substantial change in sediment composition. For comparative purposes, all sampling locations coincide with those previously sampled during the spring or summer 2012 sampling events. Surface sediment stations will be sampled for a designated list of conventional parameters, as summarized in Table 1, which provides the sampling stations, rationale for each station, and analytes for each station.

Information collected during the supplemental surface sediment collection will be compared to 2012 surface sediment conventional data as well as expected analytical method uncertainty. This comparison will act as one line of evidence to evaluate potential post-Sandy effects on the Study Area and, as necessary, inform the Phase 2 sample program.

## **DATA COLLECTION PROCEDURES**

Sampling and processing of surface sediment samples for chemical and physical testing will follow the methods outlined in the *Quality Assurance Project Plan* (QAPP; Anchor QEA 2011b) and described in greater detail in Section 7 of the FSAP (Anchor QEA 2011a). The field team will also review and implement the *Health and Safety Plan* (Anchor QEA 2011c) developed for the Remedial Investigation/Feasibility Study (RI/FS) during the supplemental sampling.

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The field program includes one round of surface sediment sampling for grain size distribution, total organic carbon (TOC), and total solids (TS). The remainder of the samples will be frozen and archived.

A hydraulic van Veen sampling device (power grab) will be used to collect the surface sediment samples where access allows. In limited access areas, a manual Ekman and/or van Veen sampler will be deployed off a limited access vessel. The 2012 sediment collection program used manual Ekman and van Veen samplers; however, using power grabs will allow for more efficient sampling.

Samples will be collected either using live-boating procedures where possible or using a three-point anchoring system to position the sampling vessel within 3 meters over the proposed target sample location. The grab sampler will be lowered over the side of the sampling vessel from a cable wire. When the sampler reaches the mudline, the grab will be activated to collect a sample. Prior to retrieval, the cable will be drawn taut and Differential Global Positioning System (DGPS) measurements recorded. All other surface sediment collection methods will follow the procedures and criteria specified in the QAPP and FSAP and relevant QAPP/FSAP Deviation Addenda (Anchor QEA 2012b, 2012c, 2012d, 2012e, 2012f).

## **STANDARD OPERATING PROCEDURES**

The following standard operating procedures (SOPs) provided in the FSAP (Anchor QEA 2011a), which include data collection forms as applicable, are relevant to this activity:

- SOP NC-01 – Field Records
  - SOP NC-02 – Equipment Decontamination
  - SOP NC-04 – Navigation and Boat Positioning
  - SOP NC-05 – Surface Sediment Sampling
  - SOP NC-07 – Calibration and Operation of a Portable Hydrogen Sulfide Monitor
  - SOP NC-13 – Sample Custody
  - SOP NC-14 – Sample Packaging and Shipping
  - SOP NC-15 – Investigation-Derived Waste Handling and Disposal
  - SOP NC-16 – Photoionization Detector Calibration and Operation
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## REPORTING

Information obtained during the supplemental surface sediment sampling and processing activities will be included in the *Phase 1 Remedial Investigation Field Program Data Summary Report – Submittal No. 3*, RI Report, and other deliverables, as appropriate.

## SCHEDULE

The supplemental surface sediment sampling is planned to commence in late February. The results of this sampling will be included in the *Phase 1 Remedial Investigation Field Program Data Summary Report – Submittal No. 3*. The schedule will be dependent on weather and field conditions but is anticipated to last 1 week.

## REFERENCES

- AECOM, 2011. *Remedial Investigation/Feasibility Study Work Plan*, Newtown Creek. June 2011.
- Anchor QEA (Anchor QEA, LLC), 2011a. *Field Sampling and Analysis Plan*. Remedial Investigation/Feasibility Study, Newtown Creek. October 2011.
- Anchor QEA, 2011b. *Quality Assurance Project Plan*, Remedial Investigation/Feasibility Study, Newtown Creek. October 2011.
- Anchor QEA, 2011c. *Health and Safety Plan*, Remedial Investigation/Feasibility Study, Newtown Creek. Revised October 2011.
- Anchor QEA, 2012a. *FSAP Addendum No. 4 – Supplemental Bathymetric Survey Data Collection*. Newtown Creek RI/FS. December 10, 2012.
- Anchor QEA, 2012b. *Phase 1 RI/FS Field Program - QAPP/FSAP Deviation Memorandum No. 1*. Newtown Creek RI/FS. March 29, 2012.
- Anchor QEA, 2012c. *Phase 1 RI/FS Field Program - QAPP/FSAP Deviation Memorandum No. 2*. Newtown Creek RI/FS. May 14, 2012.
- Anchor QEA, 2012d. *Phase 1 RI/FS Field Program - QAPP/FSAP Deviation Memorandum No. 3*. Newtown Creek RI/FS. July 20, 2012.
- Anchor QEA, 2012e. *Phase 1 RI/FS Field Program - QAPP/FSAP Deviation Memorandum No. 4*. Newtown Creek RI/FS. October 1, 2012.
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Anchor QEA, 2012f. *Phase 1 RI/FS Field Program - QAPP/FSAP Deviation Memorandum No. 5*. Newtown Creek RI/FS. October 19, 2012.

Anchor QEA, 2013. *Phase 1 Remedial Investigation Field Program Data Summary Report – Submittal No. 1*. Remedial Investigation/Feasibility Study, Newtown Creek. January 2013.

## **List of Tables**

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## **List of Figures**

Figure 1a – 1j    Results of the Preliminary Differential Bathymetry Analysis

Figure 2           Proposed Post-Sandy Surface Sediment Sampling Locations

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## TABLE

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**Table 1**  
**Surface Sediment Sampling Stations, Rationale, and Analyses**

Station ID	Sample ID	Sample Interval	Target Coordinates NAD83 <sup>1</sup> (feet)		Location in Study Area <sup>2</sup>	Rationale <sup>3</sup>	Analyses <sup>4</sup>
			Easting	Northing			
DK010SG	DK010SG-YYYYMMDD	0 - 15 cm	1000804.92	209352.21	Dutch Kills, Upper Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
EB001SG	EB001SG-YYYYMMDD	0 - 15 cm	1005504.72	200528.33	Near shoreline of East Branch, Lower Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
EB008SG	EB008SG-YYYYMMDD	0 - 15 cm	1005172.59	199870.79	Channel of East Branch, Upper Reach, near head of East Branch	No measurable change	Total solids, total organic carbon, grain size distribution, archive
EK005SG	EK005SG-YYYYMMDD	0 - 15 cm	1004048.02	200500.79	Near shoreline of English Kills, Lower Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
EK007SG	EK007SG-YYYYMMDD	0 - 15 cm	1003607.48	199960.02	Near shoreline of English Kills, Middle Reach	Net loss	Total solids, total organic carbon, grain size distribution, archive
EK016SG	EK016SG-YYYYMMDD	0 - 15 cm	1003208.80	198661.36	Channel of English Kills, Upper Reach	No measurable change	Total solids, total organic carbon, grain size distribution, archive
MC006SG	MC006SG-YYYYMMDD	0 - 15 cm	1005944.53	202987.64	Channel of Maspeth Creek, Upper Reach, near head of Maspeth Creek	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC002SG	NC002SG-YYYYMMDD	0 - 15 cm	995249.19	207782.75	Near shoreline of Newtown Creek, near confluence with East River	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC003SG	NC003SG-YYYYMMDD	0 - 15 cm	995128.38	207980.56	Channel of Newtown Creek, near mouth	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC004SG	NC004SG-YYYYMMDD	0 - 15 cm	995039.90	208152.51	Near shoreline of Newtown Creek, near confluence with East River	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC008SG	NC008SG-YYYYMMDD	0 - 15 cm	995628.24	208413.24	Near shoreline of Newtown Creek, Lower Reach, near confluence with East River	Net loss	Total solids, total organic carbon, grain size distribution, archive
NC009SG	NC009SG-YYYYMMDD	0 - 15 cm	996177.22	208501.64	Near shoreline of Newtown Creek, Lower Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
NC012SG	NC012SG-YYYYMMDD	0 - 15 cm	996800.20	208607.81	Near shoreline of Newtown Creek, Lower Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
NC015SG	NC015SG-YYYYMMDD	0 - 15 cm	997107.67	208560.79	Near shoreline of Newtown Creek, Lower Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
NC022SG	NC022SG-YYYYMMDD	0 - 15 cm	998076.69	208369.73	Channel of Newtown Creek, Lower Reach	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC027SG	NC027SG-YYYYMMDD	0 - 15 cm	999112.15	207886.11	Channel of Newtown Creek at Whale Creek/Dutch Kills	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC035SG	NC035SG-YYYYMMDD	0 - 15 cm	1000352.28	207377.42	Near shoreline of Newtown Creek, Middle Reach	Net loss	Total solids, total organic carbon, grain size distribution, archive
NC039SG	NC039SG-YYYYMMDD	0 - 15 cm	1000630.26	206568.27	Near shoreline of Newtown Creek, Middle Reach	Net loss	Total solids, total organic carbon, grain size distribution, archive
NC040SG	NC040SG-YYYYMMDD	0 - 15 cm	1000738.39	206614.29	Channel of Newtown Creek, Middle Reach	No measurable change	Total solids, total organic carbon, grain size distribution, archive

**Table 1**  
**Surface Sediment Sampling Stations, Rationale, and Analyses**

Station ID	Sample ID	Sample Interval	Target Coordinates NAD83 <sup>1</sup> (feet)		Location in Study Area <sup>2</sup>	Rationale <sup>3</sup>	Analyses <sup>4</sup>
			Easting	Northing			
NC041SG	NC041SG-YYYYMMDD	0 - 15 cm	1000813.07	206645.26	Near shoreline of Newtown Creek, Middle Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
NC049SG	NC049SG-YYYYMMDD	0 - 15 cm	1001548.53	205206.07	Channel of Newtown Creek, Middle Reach	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC059SG	NC059SG-YYYYMMDD	0 - 15 cm	1003097.54	204780.64	Near shoreline of Newtown Creek, Middle Reach	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC065SG	NC065SG-YYYYMMDD	0 - 15 cm	1004351.02	203995.96	Near shoreline of Newtown Creek, Upper Reach	Net gain	Total solids, total organic carbon, grain size distribution, archive
NC066SG	NC066SG-YYYYMMDD	0 - 15 cm	1004306.77	203469.81	Near shoreline of Newtown Creek, Upper Reach, near confluence with Maspeth Creek	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC067SG	NC067SG-YYYYMMDD	0 - 15 cm	1004473.62	203492.11	Channel of Newtown Creek, Upper Reach, near confluence with Maspeth Creek	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC068SG	NC068SG-YYYYMMDD	0 - 15 cm	1004638.91	203543.18	Near shoreline of Newtown Creek, Upper Reach, near confluence with Maspeth Creek	Net loss	Total solids, total organic carbon, grain size distribution, archive
NC073SG	NC073SG-YYYYMMDD	0 - 15 cm	1004881.00	202282.10	Channel of Newtown Creek, Upper Reach, Near Confluence with Maspeth Creek	No measurable change	Total solids, total organic carbon, grain size distribution, archive
NC078SG	NC078SG-YYYYMMDD	0 - 15 cm	1005130.83	201074.99	Near shoreline of Newtown Creek, at confluence with English Kills and East Branch	Net gain	Total solids, total organic carbon, grain size distribution, archive
NC085SG	NC085SG-YYYYMMDD	0 - 15 cm	1005179.51	201470.33	Near shoreline of Newtown Creek, near confluence with English Kills and East Branch	Net gain	Total solids, total organic carbon, grain size distribution, archive
WC003SG	WC003SG-YYYYMMDD	0 - 15 cm	998942.40	207155.42	Channel of Whale Creek, Upper Reach	No measurable change	Total solids, total organic carbon, grain size distribution, archive

Notes:

1 = Horizontal datum in North American Datum of 1983 (NAD83) U.S. State Plane using New York Long Island (NYLI).

2 = Sampling locations are approximate and may be modified based on field conditions or access issues.

3 = Net gain and net loss areas were determined based on the results of a preliminary differential bathymetry analysis conducted by comparing the 2011 single-beam bathymetry with the 2012 multi-beam/single-beam bathymetry, as described in FSAP Addendum No. 4.

4 = Field duplicate samples will be analyzed at a rate of 1 per 20 project samples (5 percent) for each matrix and method. MS/MSD samples will be collected at a rate of at least one MS/MSD sample per extraction batch and at least 1 per 20 samples (5 percent) for each matrix and method as specified in the QAPP.

cm = centimeter

FSAP = Field Sampling and Analysis Plan

MS = matrix spike

MSD = matrix spike duplicate

QAPP = Quality Assurance Project Plan

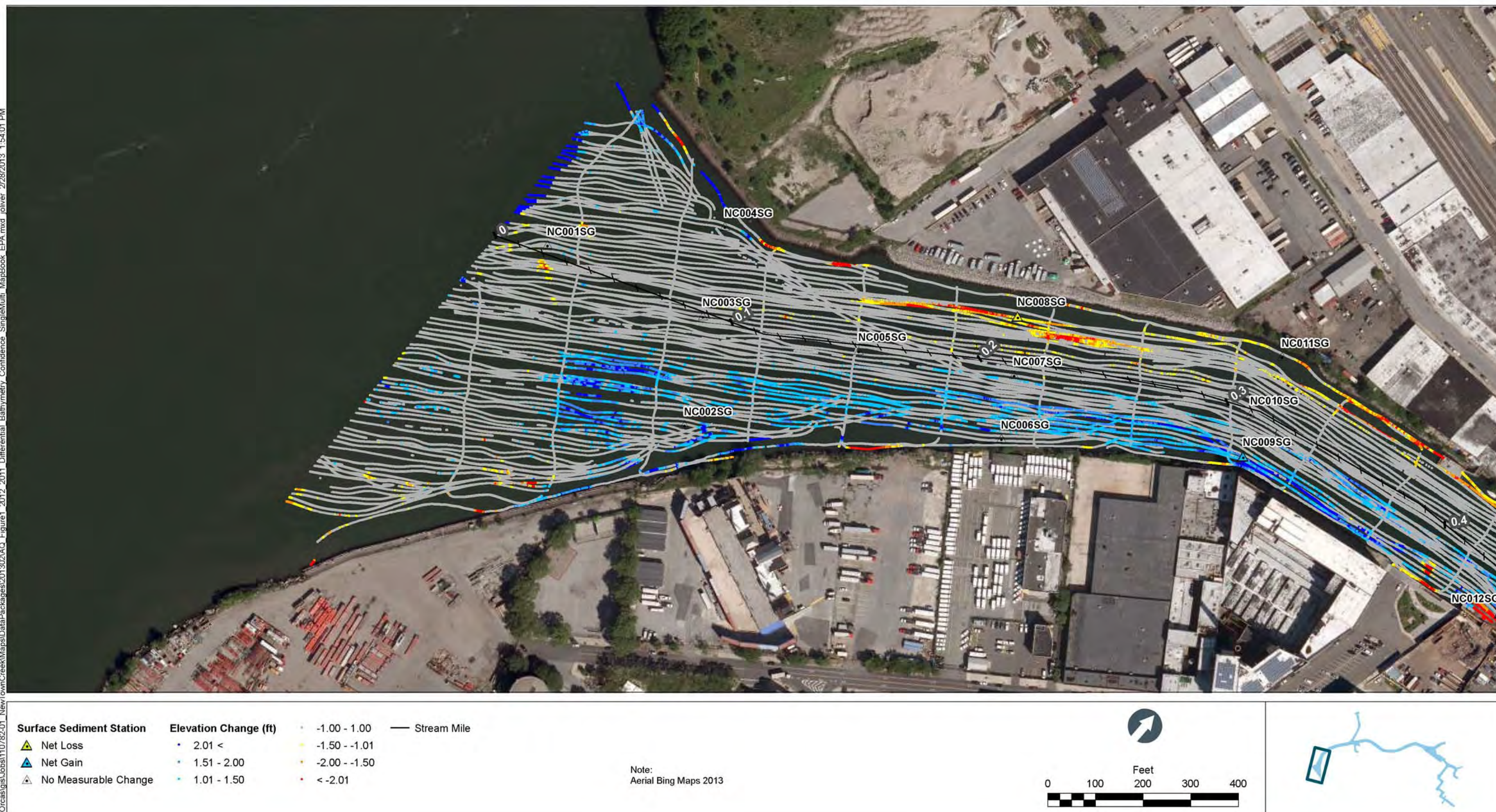


## FIGURES

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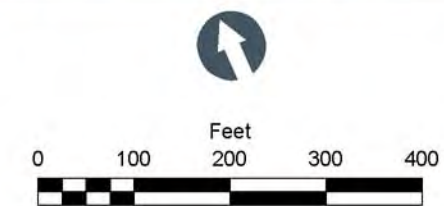
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Surface Sediment Station	Elevation Change (ft)	
▲ Net Loss	• 2.01 <	• -1.00 - 1.00
▲ Net Gain	• 1.51 - 2.00	• -1.50 - -1.01
▲ No Measurable Change	• 1.01 - 1.50	• -2.00 - -1.50
		• < -2.01

— Stream Mile

Note:  
Aerial Bing Maps 2013



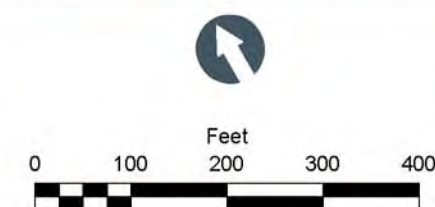


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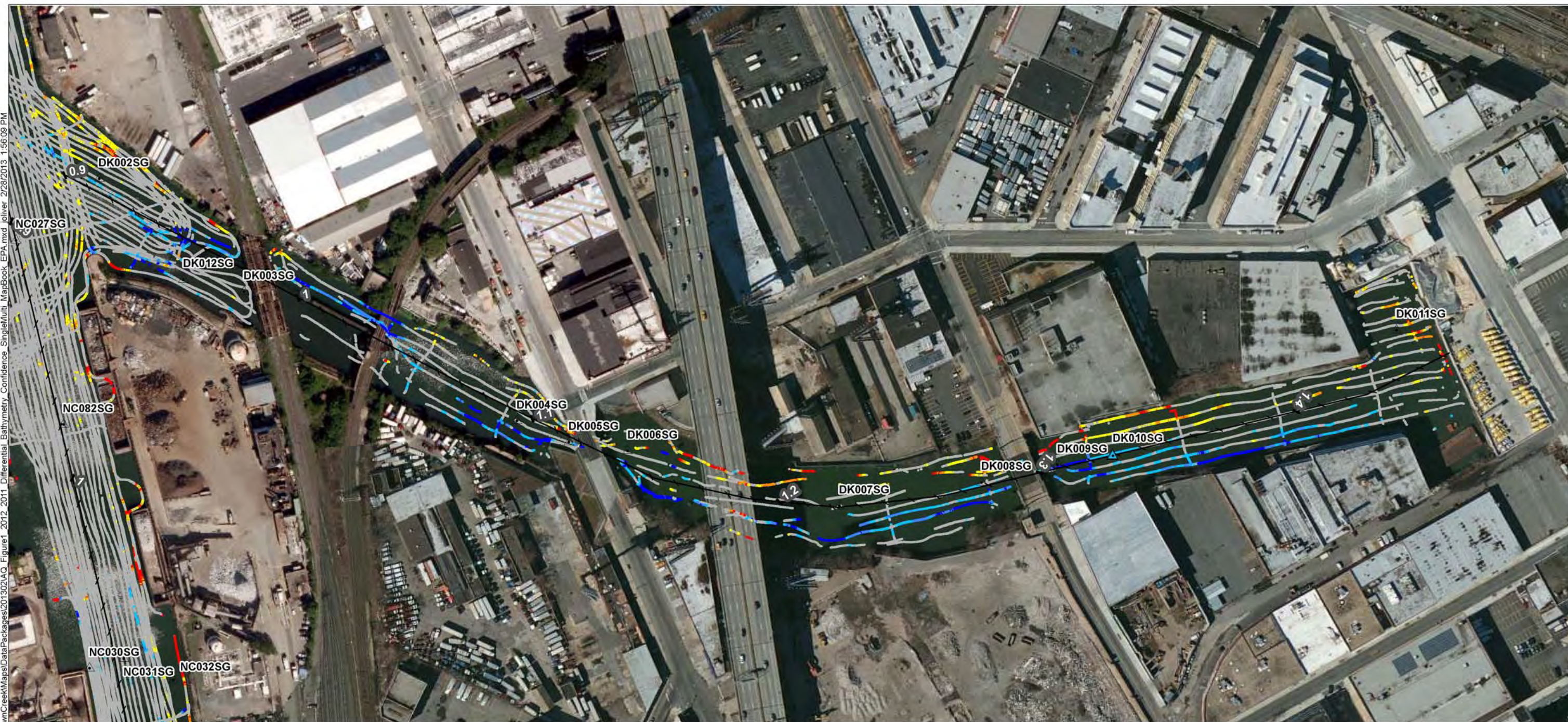
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Note:  
Aerial Bing Maps 2013





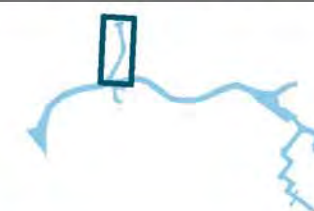
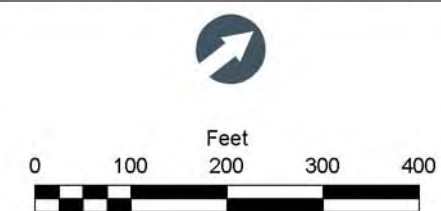
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Surface Sediment Station	Elevation Change (ft)	
▲ Net Loss	• 2.01 <	• -1.00 - 1.00
▲ Net Gain	• 1.51 - 2.00	• -1.50 - -1.01
▲ No Measurable Change	• 1.01 - 1.50	• -2.00 - -1.50
		• < -2.01

— Stream Mile

Note:  
Aerial Bing Maps 2013



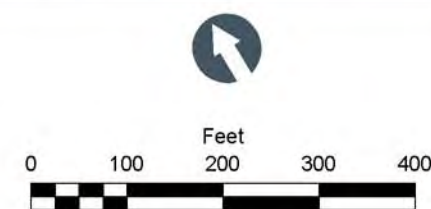


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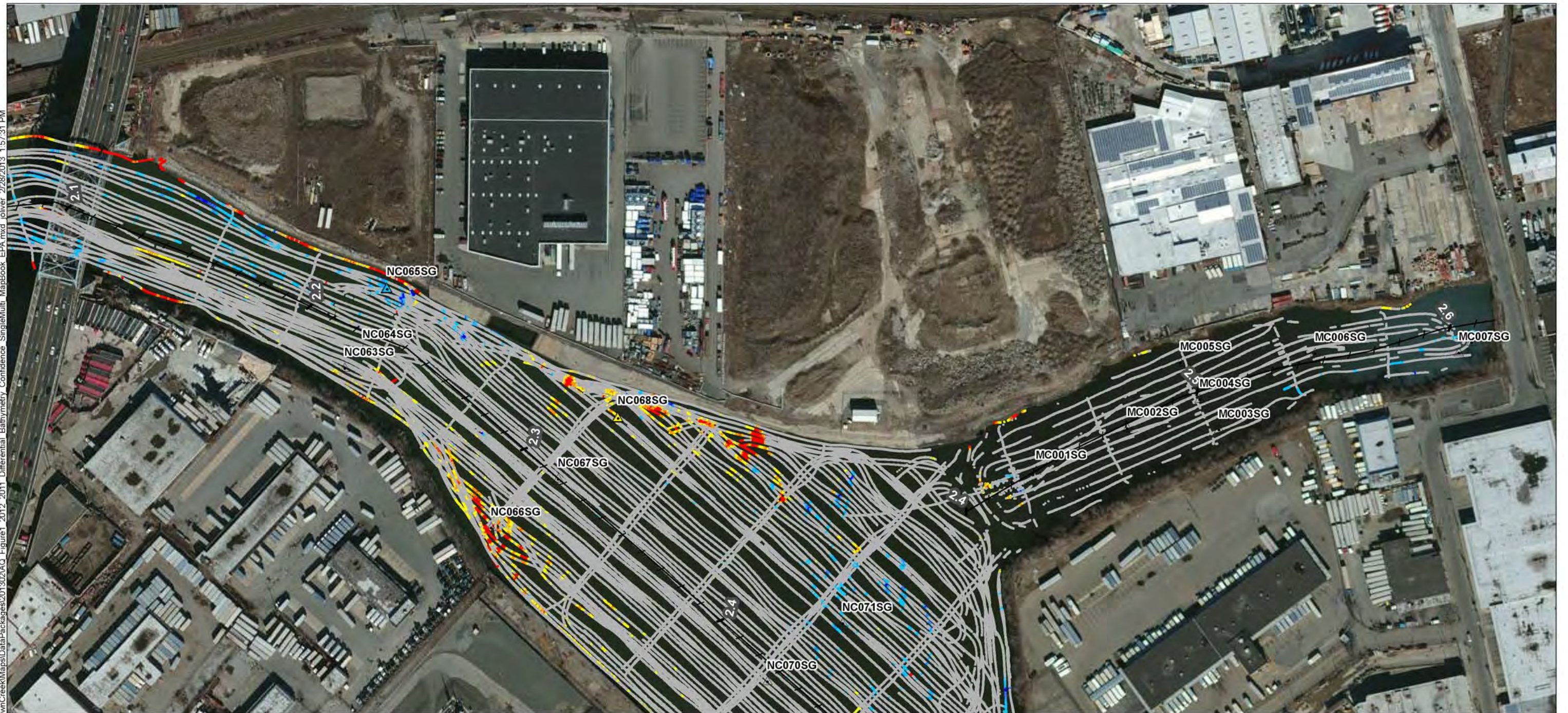
Surface Sediment Station	Elevation Change (ft)		Stream Mile
▲ Net Loss	• 2.01 <	• -1.00 - 1.00	—
▲ Net Gain	• 1.51 - 2.00	• -1.50 - -1.01	
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Note:  
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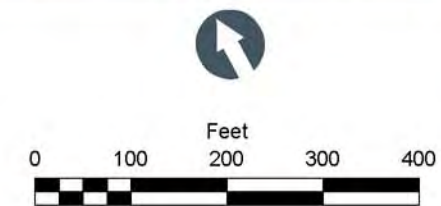


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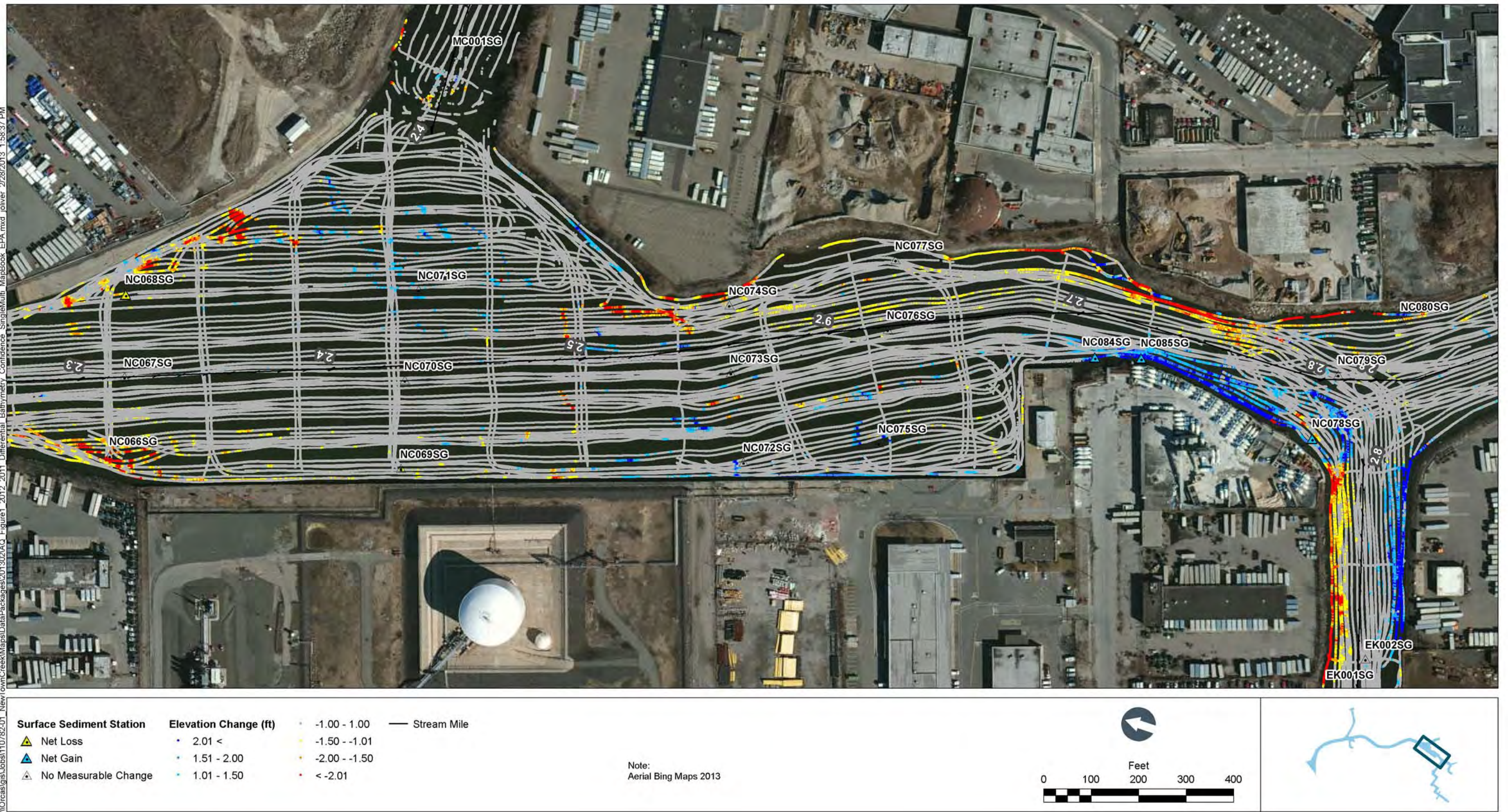
Surface Sediment Station	Elevation Change (ft)		Stream Mile
▲ Net Loss	• 2.01 <	• -1.00 - 1.00	—
▲ Net Gain	• 1.51 - 2.00	• -1.50 - -1.01	
▲ No Measurable Change	• 1.01 - 1.50	• -2.00 - -1.50	
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Note:  
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\\Orcas\gis\Jobs\110782-01 NewtownCreek\MapData\Packages\201302\AQ\_Figure1\_2012\_2011 Differential Bathymetry Confidence Single\Multi MapBook EPA.mxd joliver 2/28/2013 2:00:12 PM



**Figure 11**  
Results of the Preliminary Differential Bathymetry Analysis  
FSAP Addendum No. 5  
Newtown Creek RI/FS

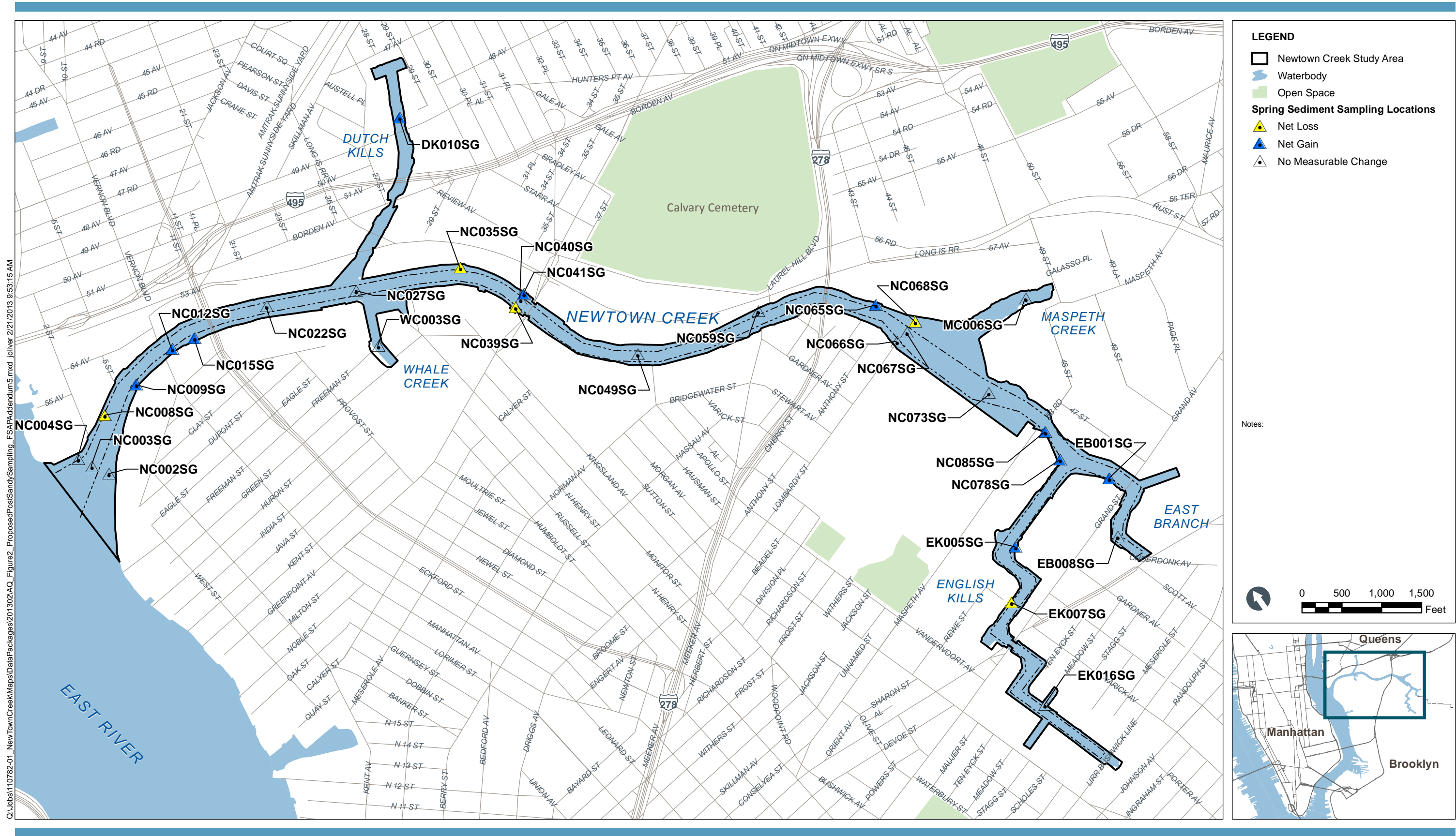


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**Figure 2**  
Proposed Post-Sandy Surface Sediment Sampling Locations  
FSAP Addendum No. 5  
Newtown Creek RI/FS